

WHAT IS CLAIMED IS:

1. An organic bistable element having a laminate structure comprising a laminate interposed between a first electrode and a second electrode, said laminate comprising two or more layers of organic thin film which are each dielectric and are different from each other in electrical conductivity, said two or more layers of organic thin film having been stacked on top of each other through an electrically conductive thin film.

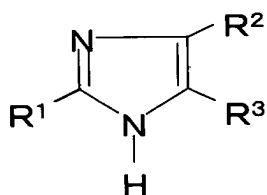
2. The organic bistable element according to claim 1, wherein said laminate comprises two layers of organic thin film which are each dielectric and are different from each other in electrical conductivity, said two layers of organic thin film having been stacked on top of each other through an electrically conductive thin film.

3. The organic bistable element according to claim 2, wherein said two layers of organic thin film are formed of respective dissimilar materials.

4. The organic bistable element according to claim 2, wherein said two layers of organic thin film are formed of an identical material and are different from each other in layer thickness of the organic thin film.

5. The organic bistable element according to claim 4, wherein the thickness of the organic thin film constituting one of the layers, a first layer, is 10 to 200 nm, and the thickness of the organic thin film constituting the other layer is 1.1 to 10 times larger than that of the organic thin film constituting the first layer.

6. The organic bistable element according to any one of claims 1 to 5, wherein the organic thin film contains an organic compound represented by formula (I):



(I)

wherein, in R^1 , R^2 , and R^3 ,

one or two of them each independently represent an electron-donating group selected from the group consisting of -H, $-NH_2$, $-NHR$, $-NR_2$, $-SR$, $-X$, $-CX_3$, $-OH$, $-OCH_3$, $-OR$ and $-R$, wherein R represents a straight chain or branched chain alkyl group having 1 to 24 carbon atoms in which one or at least two methylene groups in the alkyl group are optionally substituted by a substituent of $-O-$, $-S-$, $-CO-$, $-CHW-$, wherein W represents $-F$, $-Cl$, $-Br$, $-I$, $-CN$ or $-CF_3$, $-CH=CH-$, or $-C\equiv C-$, provided that a plurality of said substituents are not adjacent to each other, and X represents $-F$, $-Cl$, $-Br$, or $-I$; and

the remaining group or groups of R^1 , R^2 , and R^3 each independently represent an electron-receiving group selected from the group consisting of $-CN$, $-NO_2$, $-COR$, $-COOH$, $-COOR$, and $-SO_3H$.

7. The organic bistable element according to any one of claims 1 to 5, wherein said laminate structure further comprises a substrate and either the first electrode or the second electrode is stacked in contact with the top of the substrate.

8. An organic bistable memory device comprising the organic bistable element according to any one of claims 1 to 5.

9. The organic bistable memory device according to claim 8, which comprises a forming region, in which transistors are arranged on a substrate, and the organic bistable element is connected to the transistors.

10. An organic bistable memory device comprising: a first electrode and a second electrode provided orthogonally to

each other; and a laminate provided in an area, between the first electrode and the second electrode, which is an intersecting area of the first electrode and the second electrode, said laminate comprising two or more layers of organic thin film which are each dielectric and are different from each other in electrical conductivity, said two or more layers of organic thin film having been stacked on top of each other through an electrically conductive thin film.

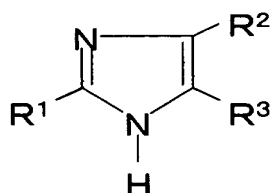
11. The organic bistable memory device according to claim 10, wherein said laminate comprises two layers of organic thin film which are each dielectric and are different from each other in electrical conductivity, said two layers of organic thin film having been stacked on top of each other through an electrically conductive thin film.

12. The organic bistable memory device according to claim 11, wherein said two layers of organic thin film are formed of respective dissimilar materials.

13. The organic bistable memory device according to claim 11, wherein said two layers of organic thin film are formed of an identical material and are different from each other in layer thickness of the organic thin film.

14. The organic bistable memory device according to claim 13, wherein the thickness of the organic thin film constituting one of the layers, a first layer, is 10 to 200 nm, and the thickness of the organic thin film constituting the other layer is 1.1 to 10 times larger than that of the organic thin film constituting the first layer.

15. The organic bistable memory device according to any one of claims 10 to 14, wherein the organic thin film contains an organic compound represented by formula (II):



(II)

wherein, in R^1 , R^2 , and R^3 ,

one or two of them each independently represent an electron-donating group selected from the group consisting of -H, -NH₂, -NHR, -NR₂, -SR, -X, -CX₃, -OH, -OCH₃, -OR and -R, wherein R represents a straight chain or branched chain alkyl group having 1 to 24 carbon atoms in which one or at least two methylene groups in the alkyl group are optionally substituted by a substituent of -O-, -S-, -CO-, -CHW-, wherein W represents -F, -Cl, -Br, -I, -CN or -CF₃, -CH=CH-, or -C≡C-, provided that a plurality of said substituents are not adjacent to each other, and X represents -F, -Cl, -Br, or -I; and

the remaining group or groups of R^1 , R^2 , and R^3 each independently represent an electron-receiving group selected from the group consisting of -CN, -NO₂, -COR, -COOH, -COOR, and -SO₃H.

16. The organic bistable memory device according to any one of claims 10 to 14, wherein said laminate structure further comprises a substrate and either the first electrode or the second electrode is stacked in contact with the top of the substrate.

17. The organic bistable memory device according to claim 9 or 10, which further comprises a limiter for limiting, in writing information into the memory device, current, which flows in either a positive bias side or a negative bias side, to a given value.

18. A method for driving the organic bistable element according to any one of claims 1 to 7, said method comprising the step of limiting, in writing information into the organic

bistable element in the organic bistable element, current, which flows in either a positive bias side or a negative bias side, to prevent a predetermined level or more of current from flowing.